

Table S1. Summary Statistics for the Observed Concentrations of 10 Elements in Whole Blood for the *Eyou Istchee* Communities (Age ≥ 8 y; both sexes; n = 1066)

	Community ^a	n	Median	Geo. Mean	Mean	S.E. of Mean	Min	Max
Cadmium (nmol/L)	C	229	5.250	6.584	15.446	1.205	0.20	77.40
	E	170	5.600	5.796	10.862	0.921	0.20	64.00
	D	134	7.850	6.746	14.320	1.345	0.20	65.00
	G	140	4.350	5.891	12.893	1.244	0.20	59.00
	F	221	7.500	6.830	13.377	0.930	0.20	73.00
	I	135	10.000	7.990	13.181	0.963	0.60	50.00
	H	128	4.350	5.064	9.556	0.986	0.20	65.00
	A	190	12.005	12.946	18.902	1.163	2.67	77.39
	B	82	19.125	14.649	23.065	2.110	1.78	83.62
Mercury (nmol/L)	C	229	21.440	21.325	48.668	4.774	0.25	498.53
	E	170	11.000	10.094	32.296	4.315	0.25	410.00
	D	134	7.350	6.683	19.199	2.775	0.25	200.00
	G	140	7.800	7.296	19.827	2.466	0.25	190.00
	F	221	11.000	9.547	25.452	2.937	0.25	300.00
	I	135	17.000	17.857	49.336	7.106	0.30	630.00
	H	128	13.500	13.614	41.636	7.323	0.30	650.00
	A	190	19.941	20.657	37.721	3.506	0.70	374.89
	B	82	10.469	12.052	31.389	7.541	0.70	538.41
Lead (µmol/L)	C	229	0.082	0.091	0.126	0.008	0.02	0.68
	E	170	0.110	0.126	0.210	0.018	0.02	1.80
	D	134	0.086	0.096	0.142	0.013	0.02	0.99

	Community ^a	n	Median	Geo. Mean	Mean	S.E. of Mean	Min	Max
	G	140	0.120	0.124	0.183	0.015	0.02	1.00
	F	221	0.150	0.156	0.244	0.017	0.02	1.60
	I	135	0.250	0.262	0.420	0.038	0.03	2.50
	H	128	0.050	0.060	0.082	0.007	0.02	0.46
	A	190	0.097	0.106	0.152	0.012	0.02	1.59
	B	82	0.082	0.094	0.137	0.016	0.02	0.77
Selenium (μmol/L)	C	229	2.030	2.143	2.183	0.031	1.39	4.94
	E	170	2.150	2.179	2.195	0.022	1.70	3.70
	D	134	2.100	2.118	2.132	0.022	1.70	3.10
	G	140	2.000	2.036	2.046	0.018	1.50	2.80
	F	221	2.100	2.107	2.124	0.019	1.30	4.20
	I	135	2.100	2.083	2.097	0.021	1.60	2.90
	H	128	2.200	2.258	2.295	0.040	1.80	4.90
	A	190	2.546	2.551	2.572	0.024	1.74	4.19
B	82	2.292	2.271	2.296	0.038	1.36	3.34	
Cobalt (nmol/L)	E	170	1.800	1.964	2.514	0.223	0.47	33.00
	D	134	3.400	3.592	3.811	0.136	2.00	15.00
	G	140	3.150	3.303	3.615	0.154	2.00	13.00
	F	221	4.000	4.195	4.442	0.113	2.00	13.00
	I	135	4.500	4.617	4.759	0.113	3.10	12.00
	H	128	4.600	5.002	6.715	1.761	3.70	230.00
	A	190	2.400	3.182	3.490	0.130	2.40	13.58
	B	82	2.400	2.835	3.039	0.163	2.40	10.18

	Community ^a	n	Median	Geo. Mean	Mean	S.E. of Mean	Min	Max
Copper (μmol/L)	E	170	16.000	15.640	15.820	0.188	10.00	27.00
	D	134	16.000	16.150	16.360	0.236	11.00	27.00
	G	140	14.000	14.690	14.840	0.183	10.00	25.00
	F	221	14.000	14.290	14.400	0.120	10.00	22.00
	I	135	15.000	15.520	15.670	0.192	11.00	24.00
	H	128	15.000	15.520	15.650	0.183	12.00	24.00
	A	190	15.150	15.500	15.730	0.212	10.00	31.00
	B	82	15.890	16.020	16.220	0.296	9.00	27.00
Molybdenum (nmol/L)	E	170	5.600	5.791	6.182	0.195	2.40	26.00
	D	134	5.450	5.638	6.158	0.282	2.50	26.00
	G	140	7.550	7.548	8.201	0.289	2.00	23.00
	F	221	5.300	5.142	5.665	0.169	0.50	21.00
	I	135	4.900	4.806	5.204	0.191	1.00	17.00
	H	128	5.850	5.971	6.485	0.249	2.00	19.00
	A	190	18.762	18.343	18.784	0.303	10.40	37.50
	B	82	14.593	14.286	14.847	0.462	8.30	27.10
Nickel (nmol/L)	E	170	20.500	21.665	24.298	1.150	7.80	110.00
	D	134	25.000	25.102	25.590	0.544	19.00	79.00
	G	140	23.000	19.573	21.366	0.625	3.00	37.00
	F	221	22.000	22.642	22.968	0.272	14.00	46.00
	I	135	8.000	6.938	7.704	0.265	2.50	20.00
	H	128	7.000	6.897	8.098	0.518	2.50	49.00
	A	190	13.630	12.494	13.575	0.422	7.20	40.90

	Community ^a	n	Median	Geo. Mean	Mean	S.E. of Mean	Min	Max
	B	82	7.229	8.714	9.202	0.426	7.20	30.70
Zinc (μmol/L)	E	170	96.000	94.330	95.212	0.997	65.00	130.00
	D	134	92.000	91.922	92.701	1.068	66.00	150.00
	G	140	91.500	90.621	91.693	1.185	63.00	130.00
	F	221	96.000	93.302	94.231	0.863	46.00	130.00
	I	135	92.000	89.586	90.830	1.264	54.00	120.00
	H	128	96.000	93.632	94.906	1.378	60.00	150.00
	A	190	93.282	91.476	92.539	0.993	54.66	130.90
	B	82	85.936	85.234	86.362	1.540	56.86	127.90

^aThe essential metals, cobalt and arsenic in blood, and As in hair and urine were not measured in C. For this reason, the results for this community are not included in the PCA and CA analyses.

Table S2. Summary Statistics for Hair, Urine and Nail Concentrations of Selected Elements in the *Eeyou Istchee* Communities (Age ≥ 8 y; both sexes)

	Community Code	n	Median	Geometric Mean	Mean	Std. Error of Mean	Minimum	Maximum
Hair analysis: Hg (nmol/g)	A	218	4.490	4.553	9.960	0.890	0.700	69.300
	B	97	1.990	2.212	4.752	0.739	0.700	43.870
	C	273	3.300	2.765	8.276	0.822	0.250	101.000
	D	136	0.771	1.072	3.580	0.569	0.250	36.987
	E	188	0.974	1.283	5.071	0.802	0.250	68.584
	F	248	0.975	1.035	3.263	0.485	0.100	80.000
	G	156	0.500	0.603	1.591	0.247	0.100	25.000
	H	153	2.400	2.165	7.799	1.263	0.100	98.000
	I	151	2.800	2.930	9.091	1.670	0.100	210.000
Hair analysis: As (µg/g) (1 µg/g = 13.35 nmol/g)	A	180	0.045	0.049	0.115	0.015	0.010	1.480
	B	78	0.050	0.039	0.058	0.006	0.010	0.260
	C	0	.	.	.	.	.	.
	D	121	0.031	0.033	0.044	0.003	0.010	0.220
	E	146	0.033	0.037	0.055	0.006	0.010	0.440
	F	190	0.038	0.041	0.058	0.005	0.010	0.810
	G	117	0.031	0.034	0.043	0.003	0.010	0.220
	H	122	0.051	0.048	0.066	0.005	0.010	0.380
	I	126	0.020	0.043	0.622	0.194	0.010	15.000
Urine analysis: Inorganic As (µmol/L)	A	185	0.050	0.068	0.079	0.004	0.050	0.390
	B	81	0.050	0.080	0.099	0.009	0.050	0.408
	C	0	.	.	.	.	.	.
	D	134	0.050	0.058	0.065	0.004	0.050	0.310
	E	171	0.050	0.064	0.077	0.005	0.050	0.470

	Community Code	n	Median	Geometric Mean	Mean	Std. Error of Mean	Minimum	Maximum
	F	219	0.050	0.066	0.083	0.005	0.050	0.570
	G	136	0.050	0.055	0.062	0.005	0.050	0.620
	H	127	0.050	0.059	0.071	0.008	0.050	0.980
	I	132	0.050	0.056	0.060	0.003	0.050	0.310
Urine analysis: I ($\mu\text{mol/L}$)	A	0	.	.	.	.	.	.
	B	0	.	.	.	.	.	.
	C	0	.	.	.	.	.	.
	D	134	1.050	0.964	1.226	0.075	0.120	4.500
	E	170	0.900	0.914	1.124	0.057	0.140	3.800
	F	184	0.845	0.795	0.988	0.052	0.050	6.900
	G	107	0.850	0.875	1.180	0.099	0.100	4.900
	H	102	0.860	0.800	1.055	0.086	0.050	6.100
	I	107	0.950	0.843	0.995	0.053	0.150	2.800
Urine analysis: Inorganic As [$\mu\text{mol/L}$]/Creatinine [mmol/L]	A	185	0.063	0.067	0.087	0.006	0.014	0.714
	B	81	0.078	0.072	0.086	0.006	0.016	0.250
	C	0	.	.	.	.	.	.
	D	134	0.007	0.007	0.011	0.001	0.002	0.083
	E	170	0.007	0.008	0.010	0.001	0.002	0.058
	F	219	0.008	0.008	0.011	0.001	0.001	0.089
	G	136	0.006	0.006	0.009	0.001	0.001	0.086
	H	127	0.007	0.007	0.009	0.001	0.002	0.054
	I	132	0.006	0.008	0.012	0.001	0.002	0.085
Urine analysis: I [$\mu\text{mol/L}$]/Creatinine [mmol/L]	A	0	.	.	.	.	.	.
	B	0	.	.	.	.	.	.

Community Code	n	Median	Geometric Mean	Mean	Std. Error of Mean	Minimum	Maximum
C	0	.	.	.	.	.	.
D	134	0.127	0.123	0.150	0.010	0.030	0.975
E	170	0.108	0.109	0.132	0.007	0.023	0.766
F	184	0.092	0.094	0.117	0.010	0.023	1.354
G	107	0.092	0.097	0.117	0.008	0.026	0.465

Table S3. Correlations of CA and PCA Loadings with Concentrations of the Study Elements (in log units) in Whole Blood, and/or in Urine or Hair

	Pearson Correlation and significance test ¹	Hair analysis : Hg [nmol/g]	Hair analysis : As [µg/g]	Blood analysis : Cd [nmol/L]	Blood analysis : Hg [nmol/L]	Blood analysis : Pb [µmol/L]	Blood analysis : Se [µmol/L]	Blood analysis : Co [nmol/L]	Blood analysis : Cu [µmol/L]	Blood analysis : Mo [nmol/L]	Blood analysis : Ni [nmol/L]	Blood analysis : Zn [µmol/L]	Urine analysis: Inorganic As [µmol/L]/Creatinine [mmol/L]
Hair, Blood, Urine (12 Elements) CA-1 (44.3%)	Pearson r	<u>-0.949</u>	-0.181	0.180	<u>-0.942</u>	-0.491	-0.389	0.061	0.026	-0.032	0.301	-0.232	-0.154
	p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.405	0.292	0.000	0.000	0.000
Hair, Blood, Urine (12 Elements) CA-2 (19.6%)	Pearson r	-0.067	0.974	0.026	-0.092	0.024	-0.016	0.017	-0.043	0.024	-0.104	-0.087	-0.016
	p-value	0.029	0.000	0.389	0.003	0.443	0.599	0.577	0.160	0.433	0.001	0.005	0.596
Hair, Blood, Urine (12 Elements) CA-3 (13.5%)	Pearson r	-0.145	0.005	<u>-0.958</u>	-0.062	-0.124	-0.143	-0.061	0.004	-0.086	0.244	-0.111	-0.237
	p-value	0.000	0.858	0.000	0.043	0.000	0.000	0.045	0.904	0.005	0.000	0.000	0.000
Hair, Blood, Urine (12 Elements) CA-4 (7.6%)	Pearson r	-0.101	0.003	0.053	0.083	0.598	-0.258	0.071	-0.105	<u>-0.789</u>	0.332	0.206	-0.548
	p-value	0.001	0.912	0.086	0.007	0.000	0.000	0.020	0.001	0.000	0.000	0.000	0.000
Hair, Blood, Urine (12 Elements) CA-5 (4.2%)	Pearson r	0.059	0.032	0.111	0.093	-0.447	0.037	-0.389	-0.112	-0.163	0.587	0.135	-0.155
	p-value	0.055	0.293	0.000	0.002	0.000	0.227	0.000	0.000	0.000	0.000	0.000	0.000
Hair, Blood, Urine (12 Elements) CA-6 (3.8%)	Pearson r	-0.043	0.004	0.030	0.055	0.356	0.070	-0.628	-0.092	0.392	0.271	-0.003	0.310
	p-value	0.162	0.898	0.333	0.071	0.000	0.023	0.000	0.003	0.000	0.000	0.913	0.000
PC-1 of Metals in Hair, Blood, Urine (23.4%)	Pearson r	0.884	0.171	0.111	0.838	0.486	0.690	-0.028	-0.015	0.306	-0.308	0.399	0.374
	p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.361	0.627	0.000	0.000	0.000	0.000
PC-2 of Metals in Hair, Blood, Urine (15.8%)	Pearson r	-0.176	-0.076	0.212	-0.281	-0.517	0.199	-0.065	0.194	0.820	-0.088	-0.350	0.614
	p-value	0.000	0.013	0.000	0.000	0.000	0.000	0.034	0.000	0.000	0.004	0.000	0.000
PC-3 of Metals in Hair, Blood, Urine (10.6%)	Pearson r	-0.119	-0.339	0.142	-0.077	-0.138	0.282	-0.332	-0.388	0.023	0.601	0.558	-0.057
	p-value	0.000	0.000	0.000	0.012	0.000	0.000	0.000	0.000	0.448	0.000	0.000	0.063
PC-4 of Metals in Hair, Blood, Urine (9.4%)	Pearson r	-0.129	-0.180	0.698	-0.177	0.011	0.142	0.501	0.246	-0.088	-0.055	0.288	0.008
	p-value	0.000	0.000	0.000	0.000	0.712	0.000	0.000	0.000	0.004	0.073	0.000	0.793
PC-5 of Metals in Hair, Blood, Urine (8.5%)	Pearson r	-0.125	0.701	0.316	-0.146	0.025	-0.012	0.006	-0.617	0.067	-0.093	-0.009	0.003
	p-value	0.000	0.000	0.000	0.000	0.418	0.702	0.853	0.000	0.030	0.002	0.775	0.925

Note: large negative correlations are indicated by underlining of value; large positive (shaded blue), robust positive, and robust negative correlations are indicated by **bold-face type**. Element concentrations Log10 transformed before calculation of correlations. ¹ Pearson Correlation with 2-tailed test.

